



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

215 Fremont Street
San Francisco, Ca. 94105

(0098)
SFUND RECORDS CTR
2380742

DEC 01 1988

MEMORANDUM

SUBJECT: Review of Analytical Data
FROM: *Kent M. Kitchingman*
Kent M. Kitchingman, Chief
Quality Assurance Management Section
Environmental Services Branch, OPM (P-3-2)
TO: Tom Mix, Chief
Site Evaluation Section
Field Operations Branch, TWPD (T-4-7)

Attached are comments resulting from Region 9 review of the following analytical data:

SITE: Pacific Fruit Express
EPA SITE ID NO.: AZD 045804325
CASE/SAS NO.: 10350/4111Y #2

LABORATORY: KEYTY
ANALYSES: Metals

SAMPLE NO.: MYC652 to 696
COLLECTION DATE: 9/14 & 15/88

REVIEWER: Greg Nicoll (ICF Technology Incorporated)
TELEPHONE: (415) 957-0110

If there are any questions, please contact the reviewer.

Attachment

cc: Carla Dempsey, QA Officer, EPA-HQ (WH-548A)
Jimmie D. Petty, EMSL-LV, QAD
David Stockton, DPO Region VI X FYI Action



ICF TECHNOLOGY INCORPORATED

QUALITY ASSURANCE REPORT

Site: Pacific Fruit Express

EPA Site I.D. Number: AZD045804325

TID Number: 9A-8810-026

Case Number: 10350/4111Y Memo #2

Laboratory: Keystone

Matrix/Analyses: 7 soils and 7 waters for RAS metals

Sample Number: MYC683 through MYC696

Collection Date: September 14 and 15, 1988

Date Data Package Received by ESAT: November 9, 1988

Data Package Received From: ESB, EPA Region IX

Follow-Up Data Request Received On:

Evaluated By: Greg Nicoll
ESAT/ICF Technology, Inc.

Data Review Completed On: November 25, 1988

Approved By: *George Vail*

Date Data Review Report Forward to ESB: November 25, 1988

EPA Concurrence: *Robert M. Ringhouse*
12/1/88

Data Validation Report

Case No.: 10350/4111Y Memo #2

Site: Pacific Fruit Express

Laboratory: Keystone

Reviewer: G. Nicoll, ESAT/ICF Technology, Inc.

Date of this report: November 25, 1988

7 soils and 7 waters
for RAS metals

I. Introduction

Seven water samples (sample numbers MYC690 through MYC696) and seven soil samples (sample numbers MYC683 through MYC689) were submitted to the laboratory for RAS metals analyses on September 19, 1988.

Sample number MYC692 is a field blank. Sample number MYC688 and MYC694 are background samples. Sample numbers MYC684 & MYC685 and MYC690 & MYC691 are field duplicates. The soil field duplicates were considered to be collocated. Field duplicate pairs have D# suffix (D1 for the first field pair, D2 for the second field pair) in Table 1A.

The analytical results with qualifications are listed in Table 1A. This report was prepared in accordance with the EPA Contract Laboratory Program Inorganic Statement of Work for July 1987 and EPA document "Laboratory Data Validation Functional Guidelines For Evaluation Inorganic Analyses" (1985).

II. Validity and Comments

- A. The following results are considered usable for limited purposes because of accuracy problems. The results are considered as estimates and are flagged "J" in Table 1A.

Arsenic in sample numbers MYC683 through MYC689
Barium in all samples and laboratory blanks
Cadmium in sample numbers MYC683 through MYC685
Manganese in sample numbers MYC683 through MYC689

Matrix spike recovery results do not meet criteria for accuracy as listed below. The possible percent bias for each element is also presented below.

	MYC690		MYC683	
	Water	Water	Soil	Soil
<u>Parameter</u>	<u>% Recovery</u>	<u>% Bias</u>	<u>% Recovery</u>	<u>% Bias</u>
Arsenic	--	--	232	+130
Barium	40	-60	36	-60
Cadmium	--	--	139	+40
Manganese	--	--	167	+70

The Method of Standard Additions correlation coefficients for arsenic in the sample numbers listed below do not meet criteria for accuracy.

<u>Parameter</u>	<u>Sample Number</u>	<u>Correlation Coefficient</u>
Arsenic	MYC684	0.970
Arsenic	MYC685	0.916
Arsenic	MYC686	0.993
Arsenic	MYC687	0.986

- B. The following results are considered usable for limited purposes because of precision problems. The results are considered as estimates and are flagged "J" in Table 1A.

Arsenic in sample numbers MYC683 through MYC689 and the soil laboratory blank
 Cadmium in sample numbers MYC683 through MYC689 and the soil laboratory blank
 Copper in sample numbers MYC690 through MYC696 and the water laboratory blank
 Iron in sample numbers MYC690 through MYC696 and the water laboratory blank
 Lead in all samples and laboratory blanks

Laboratory and field duplicate results did not meet criteria for precision as listed below.

	MYC683	MYC690 D2
	Lab.Dup.	MYC691 D2
	Soil	Water
<u>Parameter</u>	<u>RPD</u>	<u>RPD</u>
Arsenic	88	--
Cadmium	92	--
Copper	--	91
Iron	--	49
Lead	48	55

- C. The following results are considered usable for limited purposes due to quantitation problems. The results are considered as estimates and are flagged "J" in Table 1A.

All results above the instrument detection limit for waters or the method detection limit for soils but below the contract required quantitation limit (denoted with an "L" qualifier)

Results above the instrument detection limit for waters or the method detection limit for soils but below the contract required quantitation limit are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

- D. The following results are considered usable for limited purposes due to possible contamination problems. The results are considered as suspects and reported as estimates with a "J" flag in Table 1A.

Aluminum in sample numbers MYC690 through MYC696
 Barium in sample numbers MYC690, MYC691, and MYC693 through MYC696
 Calcium in sample number MYC692
 Copper in sample numbers MYC691 through MYC696
 Iron in sample numbers MYC690 through MYC696
 Manganese in sample numbers MYC690, MYC691, and MYC693
 Sodium in sample numbers MYC683 through MYC689 and MYC692

These results were detected above the instrument or method detection limit and less than five times the highest field or laboratory blank. Field and laboratory blank results which were less than the contract required quantitation limit and less than twice the instrument or method detection limit were not used to determine contamination problems.

- E. The following results are considered usable for limited purposes because of problems seen with the ICP serial dilution. These results are considered as estimates and are flagged "J" in Table 1A.

Aluminum in sample numbers MYC683 through MYC689 and the soil laboratory blank
 Calcium in sample numbers MYC690 through MYC696 and the water laboratory blank
 Magnesium in sample numbers MYC683 through MYC696 and both laboratory blanks
 Zinc in sample numbers MYC683 through MYC689 and the soil laboratory blank

The ICP serial dilution did not meet criteria as listed below.

	MYC690	MYC683
	Water	Soil
<u>Parameter</u>	<u>RPD</u>	<u>RPD</u>
Aluminum	--	13
Calcium	12	--
Magnesium	12	12
Zinc	--	12

- F. The 40 CFR 136 holding times were not exceeded for the water samples. There were no holding time problems with the soil samples.
- G. The background samples (MYC688 and MYC694) had a number of parameters with concentration levels above the field blank.
- H. All samples were received by the laboratory with cut chain of custody seals. The results may not be useful as legal evidence.
- I. All other results are considered valid and usable for all purposes. All QC parameters, other than those discussed here, have been met.

ANALYTICAL RESULTS

Page 1 of 4

TABLE 1A

Case No.: 10350/4111Y Memo #2

Analysis Type: Soil for RAS metals

Site: Pacific Fruit Express

Lab: Keystone

Reviewer: G. Nicoll, ESAT/ICF Technology, Inc.

Date: November 25, 1988

Concentration in mg/kg

Sample Location																																				
Sample I.D.	MYC683			MYC684 D1			MYC685 D1			MYC686			MYC687			MYC688 BG			MYC689			Lab Blank														
Parameter	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.									
Aluminum	1970	J	e	9210	J	e	10100	J	e	13400	J	e	11800	J	e	13800	J	e	1820	J	e	4.6	L	J	ce											
Antimony	3.6	U		4.5	U		4.3	U		4.1	U		4.2	U		3.8	U		3.1	U		2.9	U													
Arsenic	11.2	J	ab	11.1	J	ab	21.3	J	ab	4.5	J	ab	4.0	J	ab	3.1	J	ab	2.5	J	ab	0.72	U	J	b											
Barium	82.5	J	a	321	J	a	604	J	a	111	J	a	82.1	J	a	72.6	J	a	29.5	L	J	a	2.4	U	J	a										
Beryllium	0.40	L	J	c	0.87	L	J	c	0.97	L	J	c	1.2	L	J	c	1.0	L	J	c	0.34	L	J	c	0.080	L	J	c								
Cadmium	3.5	J	ab	11.5	J	ab	12.4	J	ab	0.87	U	J	b	0.88	U	J	b	0.81	U	J	b	0.65	U	J	b	0.62	U	J	b							
Calcium	17700			35100			34600			64100			55100			4940			4110			67.9	L	J	c											
Chromium	78.6			208			197			11.7			18.9			11.3			2.4			0.68	U													
Cobalt	5.7			7.1	L	J	c	9.2	L	J	c	4.9	L	J	c	3.8	L	J	c	5.6	L	J	c	1.8	L	J	c	0.76	U							
Copper	125			428			533			42.3			33.1			17.1			77.7			0.58	U													
Iron	14300			17400			20400			11300			11000			13200			5740			7.0	L	J	c											
Lead	354	J	b	680	J	b	858	J	b	42.4	J	b	78.5	J	b	24.5	J	b	10.1	J	b	0.46	U	J	b	0.46	U	J	b							
Magnesium	1530	J	e	4750	J	e	4780	J	e	8100	J	e	5230	J	e	4440	J	e	913	L	J	ce	5.7	U	J	e										
Manganese	144	J	a	227	J	a	265	J	a	184	J	a	166	J	a	253	J	a	78.7	J	a	0.12	U													
Mercury	0.14			0.32			0.58			0.14	U		0.14	U		0.13	U		0.10	U		0.10	U													
Nickel	12.2			18.3			21.4			6.9	L	J	c	8.0	L	J	c	9.2	L	J	c	3.2	L	J	c	2.8	U									
Potassium	417	L	J	c	2090		2310			2840			2900			3880			455	L	J	c	70.8	U												
Selenium	0.92	U		1.1	U		1.1	U		1.0	U		1.1	U		0.96	U		0.78	U		0.74	U													
Silver	0.67	L	J	c	0.83	U	0.79	U		0.76	U		0.77	U		0.70	U		0.57	U		0.54	U													
Sodium	342	L	J	cd	554	L	J	cd	598	L	J	cd	381	L	J	cd	300	L	J	cd	303	L	J	cd	461	L	J	cd	182	L	J	c				
Thallium	0.45	U		0.56	U		0.53	U		0.50	U		0.51	U		0.47	U		0.38	U		0.36	U													
Vanadium	6.0	L	J	c	23.3		26			36.9			19.9			23.8			8.6	L	J	c	0.66	U												
Zinc	633	J	e	1380	J	e	1610	J	e	64.4	J	e	112	J	e	43.5	J	e	37.4	J	e	3.0	L	J	ce											
Percent Solids	80.8			64.7			68.3			71.4			70.2			76.9			95.4			--														

Val-Validity Refer to Data Qualifiers in Table 1B.

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank; BG-Background

CRQL-Contract Required Quantitation Limit

ANALYTICAL RESULTS

Page 2 of 4

TABLE 1A

Case No.: 10350/4111Y Memo #2

Analysis Type: Soil for RAS metals

Site: Pacific Fruit Express

Lab: Keystone

Reviewer: G. Nicoll, ESAT/ICF Technology, Inc.

Date: November 25, 1988

Concentration in mg/kg

Sample Location																					
Sample I.D.	MDL			CRQL																	
Parameter	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.
Aluminum	3.2			40																	
Antimony	2.9			12																	
Arsenic	0.72			2																	
Barium	2.4			40																	
Beryllium	0.060			1																	
Cadmium	0.62			1																	
Calcium	2.0			1000																	
Chromium	0.68			2																	
Cobalt	0.76			10																	
Copper	0.58			5																	
Iron	1.4			20																	
Lead	0.46			1																	
Magnesium	5.7			1000																	
Manganese	0.12			3																	
Mercury	0.10			0.1																	
Nickel	2.8			8																	
Potassium	70.8			1000																	
Selenium	0.74			1																	
Silver	0.54			2																	
Sodium	5.8			1000																	
Thallium	0.36			2																	
Vanadium	0.66			10																	
Zinc	2.3			4																	
Percent Solids	--			--																	

Val-Validity Refer to Data Qualifiers in Table 1B.

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils

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ANALYTICAL RESULTS

Page 3 of 4

TABLE 1A

Case No.: 10350/4111Y Memo #2

Analysis Type: Water for RAS metals

Site: Pacific Fruit Express

Lab: Keystone

Reviewer: G. Nicoll, ESAT/ICF Technology, Inc.

Date: November 25, 1988

Concentration in ug/L

Sample Location	MYC690 D2			MYC691 D2			MYC692 FB			MYC693			MYC694 BG			MYC695			MYC696			Lab Blank		
Sample I.D.																								
Parameter	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.
Aluminum	61.0 L	J	cd	33.4 L	J	cd	199 L	J	cd	47.2 L	J	cd	29.3 L	J	cd	21.2 L	J	cd	153 L	J	cd	42.3 L	J	c
Antimony	14.7 U			14.7 U			14.7 U			14.7 U			14.7 U			14.7 U			14.7 U			14.7 U		
Arsenic	5.8 L			5.8 L			3.6 U			6.6 L	J	c	7.8 L	J	c	8.8 L	J	c	6.1 L	J	c	3.6 U		
Barium	64.6 L	J	acd	64.6 L	J	acd	119 L	J	c	57.8 L	J	acd	59.1 L	J	acd	73.8 L	J	acd	61.9 L	J	acd	11.9 U	J	a
Beryllium	0.30 U			0.30 U			0.30 U			0.30 U			0.30 U			0.30 U			0.30 U			0.30 U		
Cadmium	3.1 U			3.1 U			3.1 U			3.1 U			3.1 U			3.1 U			3.1 U			3.1 U		
Calcium	54300	J	e	54900	J	e	265 L	J	cde	48000	J	e	40000	J	e	38500	J	e	46800	J	e	108 L	J	ce
Chromium	3.4 U			3.4 U			3.4 U			3.4 U			3.4 U			3.4 U			3.4 U			3.4 U		
Cobalt	3.8 U			3.8 U			3.8 U			3.8 U			3.8 U			3.8 U			3.8 U			3.8 U		
Copper	76.2	J	b	28.6	J	bd	8.3 L	J	bcd	6.9 L	J	bcd	4.9 L	J	bcd	6.6 L	J	bcd	24.0 L	J	bcd	7.4 L	J	bc
Iron	671	J	bd	406	J	bd	216	J	bd	67.3 L	J	bcd	43.4 L	J	bcd	46.4 L	J	bcd	347	J	bd	45.1 L	J	bc
Lead	12.0	J	b	6.8	J	b	2.3 U	J	b	2.3 U	J	b	2.3 U	J	b	2.3 U	J	b	4.5 L	J	bc	2.3 U	J	b
Magnesium	7660	J	e	7630	J	e	136 L	J	ce	6720	J	e	4750 L	J	ce	3670 L	J	ce	5950	J	e	33.5 L	J	ce
Manganese	2.4 L	J	acd	2.1 L	J	acd	1.5 L	J	c	1.5 L	J	cd	0.60 U			0.60 U			13.9 L	J	c	0.60 U		
Mercury	0.20 U			0.20 U			0.20 U			0.22			0.20 U			0.20 U			0.20 U			0.20 U		
Nickel	14.0 U			14.0 U			14.0 U			14.0 U			14.0 U			14.0 U			14.0 U			14.0 U		
Potassium	2300 L	J	c	2110 L	J	c	354 U			1930 L	J	c	2050 L	J	c	2030 L	J	c	2300 L	J	c	354 U		
Selenium	3.7 U			3.7 U			3.7 U			3.7 U			3.7 U			3.7 U			3.7 U			3.7 U		
Silver	2.7 U			2.7 U			2.7 U			2.7 U			2.7 U			2.7 U			2.7 U			2.7 U		
Sodium	49900			48900 U			399 L	J	cd	54400			54200			55000			48400			201 L	J	c
Thallium	1.8 U			1.8 U			1.8 U			1.8 U			1.8 U			1.8 U			1.8 U			1.8 U		
Vanadium	8.4 L	J	c	8.4 L	J	c	3.3 U			11.1 L	J	c	13.5 L	J	c	9.5 L	J	c	9.3 L	J	c	3.3 U		
Zinc	17.0 L	J	c	11.4 U			11.4 U			11.4 U			11.4 U			29.8			24.0			11.4 U		

Val-Validity Refer to Data Qualifiers in Table 1B.

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank; BG-Background

CRQL-Contract Required Quantitation Limit

ANALYTICAL RESULTS

Page 4 of 4

TABLE 1A

Case No.: 10350/4111Y Memo #2

Analysis Type: Water for RAS metals

Site: Pacific Fruit Express

Lab: Keystone

Reviewer: G. Nicoll, ESAT/ICF Technology, Inc.

Date: November 25, 1988

Concentration in ug/L

Sample Location																					
Sample I.D.	IDL			CRQL																	
Parameter	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.	Result	Val	Com.
Aluminum	16.4			200																	
Antimony	14.7			60																	
Arsenic	3.6			10																	
Barium	11.9			200																	
Beryllium	0.30			5																	
Cadmium	3.1			5																	
Calcium	9.8			5000																	
Chromium	3.4			10																	
Cobalt	3.8			50																	
Copper	2.9			25																	
Iron	6.9			100																	
Lead	2.3			5																	
Magnesium	28.3			5000																	
Manganese	0.60			15																	
Mercury	0.20			0.2																	
Nickel	14.0			40																	
Potassium	354			5000																	
Selenium	3.7			5																	
Silver	2.7			10																	
Sodium	29.1			5000																	
Thallium	1.8			10																	
Vanadium	3.3			50																	
Zinc	11.4			20																	

Val-Validity Refer to Data Qualifiers in Table 1B.

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank; BG-Background

CRQL-Contract Required Quantitation Limit

TABLE 1B

DATA QUALIFIERS

NO QUALIFIER indicates that the data are acceptable both qualitatively and quantitatively.

- U Indicates that the parameter is not detected above the concentration listed. (Usually the instrument detection limit for waters and the method detection limit for soils with a correction for percent solids.)
- L Indicates results which fall between the instrument detection limit for waters or the method detection limit for soils and the contract required quantitation limit. Results are considered estimates and usable for limited purposes.
- J Results are considered estimates and the data are valid for limited purposes. The results are qualitatively acceptable.
- R Results are rejected and data are invalid for all purposes.

CALCULATIONS FOR RAS INORGANICS IN SOIL

	MDL: Method detection limit obtained in mg/kg	CRQL: Contract required quantitation limit in mg/kg
Mercury:	$\frac{\text{IDL (ug/L)} \times 0.1 \text{ L} \times 0.001 \text{ mg/ug}}{0.0002 \text{ kg dry weight}}$	$\frac{\text{CRQL (ug/L)} \times 0.1 \text{ L} \times 0.001 \text{ mg/ug}}{0.0002 \text{ kg dry weight}}$
Others :	$\frac{\text{IDL (ug/L)} \times 0.2 \text{ L} \times 0.001 \text{ mg/ug}}{0.001 \text{ kg dry weight}}$	$\frac{\text{CRQL (ug/L)} \times 0.2 \text{ L} \times 0.001 \text{ mg/ug}}{0.001 \text{ kg dry weight}}$

IDL: Instrument detection limit obtained by the laboratory for clean water.